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L21: Entry 4 of 17

File: USPT

Dec 10, 2002

US-PAT-NO: 6491955

DOCUMENT-IDENTIFIER: US 6491955 B1

TITLE: .beta.-D-galactosidase microencapsulated with fatty acid ester and milk containing the same

DATE-ISSUED: December 10, 2002

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------|-------|-------|----------|---------|
| Kwak; Hae-Soo | Seoul | | | KR |
| Lim; Mi-Ri | Seoul | | | KR |

ASSIGNEE-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY | TYPE CODE |
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| Anigen Co., Ltd. | | | | KR | 03 |

APPL-NO: 09/ 564994 [PALM]

DATE FILED: May 4, 2000

PARENT-CASE:

This application is a continuation of U.S. patent application Ser. No. 09/122,119 filed Jul. 24, 1998, now abandoned.

FOREIGN-APPL-PRIORITY-DATA:

| COUNTRY | APPL-NO | APPL-DATE |
|---------|---------|-------------------|
| KR | 98-5802 | February 24, 1998 |

INT-CL: [07] A23 C 9/12

US-CL-ISSUED: 426/61; 426/34, 426/89, 426/99, 426/580, 426/585

US-CL-CURRENT: 426/61; 426/34, 426/580, 426/585, 426/89, 426/99

FIELD-OF-SEARCH: 426/61, 426/580, 426/585, 426/34, 426/48, 426/64, 426/89, 426/98, 426/99

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

☐ Search Selected☐ Search ALL

| PAT-NO | ISSUE-DATE | PATENTEE-NAME | US-CL |
|---|---------------|-----------------|----------|
| <input type="checkbox"/> <u>5064669</u> | November 1991 | Tan et al. | 426/307 |
| <input type="checkbox"/> <u>5391371</u> | February 1995 | Jacobson et al. | 424/94.2 |
| <input type="checkbox"/> <u>5902617</u> | May 1999 | Pabst | 426/61 |
| <input type="checkbox"/> <u>6402997</u> | June 2002 | Kwak et al. | |

OTHER PUBLICATIONS

Rao et al., AN 436073 FROSTI, abstracting Food Science and Technology International, 1997, Apr. 3(2), 81-86, Apr., 1997.
Rao et al., AN 381960 FROSTI, abstracting Journal of Food Biochemistry, 1995 18(4), 239-252, 1995.
Chawan et al. AN 327212 FROSTI, abstracting Journal of Food Biochemistry, 1993, 16(6), 349-357, 1993.
C.B. Chawan P.K. Penmetsa, R. Veeramachaneni, D.R. Rao, "Liposomal Encapsulation of B-Galactosidase: Effect of Buffer Molrity, Lipid Composition and Stability in Milk," Journal of Food Biochemistry 16 (1993) 349-357.
D.R. Rao, C.B. Chawan, R. Veeramachaneni, "Liposomal Encapsulation of B-Galactosidase: Comparison of Two Methods of Encapsulation and In Vitro Lactose Digestibility," Journal of Food Biochemistry 18 (1995) 239-251.

ART-UNIT: 1761

PRIMARY-EXAMINER: Wong; Leslie

ATTY-AGENT-FIRM: Mathews, Collins, Shepherd & McKay, P.A.

ABSTRACT:

A .beta.-D-galactosidase which is encapsulated with fatty acid ester, does not exert its hydrolysis function in milk but hydrolyze lactose in the human body. Hence, the milk containing the encapsulated .beta.-D-galactosidase, does not change in sweetness with storage and is digestible to the .beta.-D-galactosidase-deficient people. In addition, the milk can maintain its characteristic taste without off-flavor by virtue of the excellent feature of fatty acid ester.

6 Claims, 0 Drawing figures

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Brief Summary Text (9):

In 1990s, a further advanced milk product was developed. The milk was free of lactose because it was removed through ultra filtration (UF). However, removal of lactose is accompanied by a great loss of an important nutrient as well as of milk's characteristic flavor. Also, this technique has a significant disadvantage of decreasing the product yield by 5%. In addition, the UF apparatus is very expensive and continuously needs supplies, such as filters, cleansing agent, etc, giving rise to a significant increase of cost.

Brief Summary Text (10):

An advanced technique is disclosed in Korean Pat. Nos. 088464 and 088465. According to the patents, butter is melted at 40.degree. C. for 6 hours, dispersed at 50.degree. C. by use of the supernatant fat, emulsified with the aid of an emulsifying agent, and sprayed under a high pressure into low-fat milk (fat content 1% or less) at 5-10.degree. C. to coat lactose. As a result, capsules 5-20 .mu.m in diameter are produced at a yield of about 85%. For its preparation, the emulsion requires a long time and a high temperature (50.degree. C.), which may be factors to cause degradation in the production yield and in the quality of the fat, respectively. Further, since fat is used as the coating agent, low-fat milk is needed, requiring a cream separation process. In addition, the emulsifying agent used generally smells bad, giving unpleasant flavor to the milk. Furthermore, the capsules are too large in diameter and so rise to the surface of milk after storage for 2-5 hours.

Current US Original Classification (1):426/61Current US Cross Reference Classification (1):426/34Current US Cross Reference Classification (2):426/580Current US Cross Reference Classification (3):426/585Current US Cross Reference Classification (4):426/89Current US Cross Reference Classification (5):426/99